

ABSTRACT OF THE DISCLOSURE

METHOD FOR PRODUCING NITROGEN TO USE IN UNDER BALANCED DRILLING, SECONDARY RECOVERY PRODUCTION OPERATIONS AND PIPELINE MAINTENANCE

The invention uses a feed of atmospheric air and mixes the air with hydrogen. The hydrogen and air mixture is fed into a catalytic reactor where a deoxygenation reaction occurs. The deoxygenation reaction uses a platinum catalyst to produce water from oxygen and hydrogen. The nitrogen passes through the catalytic reactor without reacting with the hydrogen, the oxygen, or the water. The water is separated from the nitrogen in a dryer. The nitrogen may then be used in drilling and production operations. The water is fed into an electrolyzer where an electrolysis reaction occurs. The electrolyzer passes an electrical current through the water to produce gaseous oxygen and hydrogen. The hydrogen is recycled back to the catalytic reactor and the oxygen may be vented or sold.